

U.S. Census Bureau's



MAF/TIGER Enhancements Program

Objective 1: MAF/TIGER Automated Improvement Program

Presented by

Linda Akers

Geographer

US Census Bureau

LA Regional Office

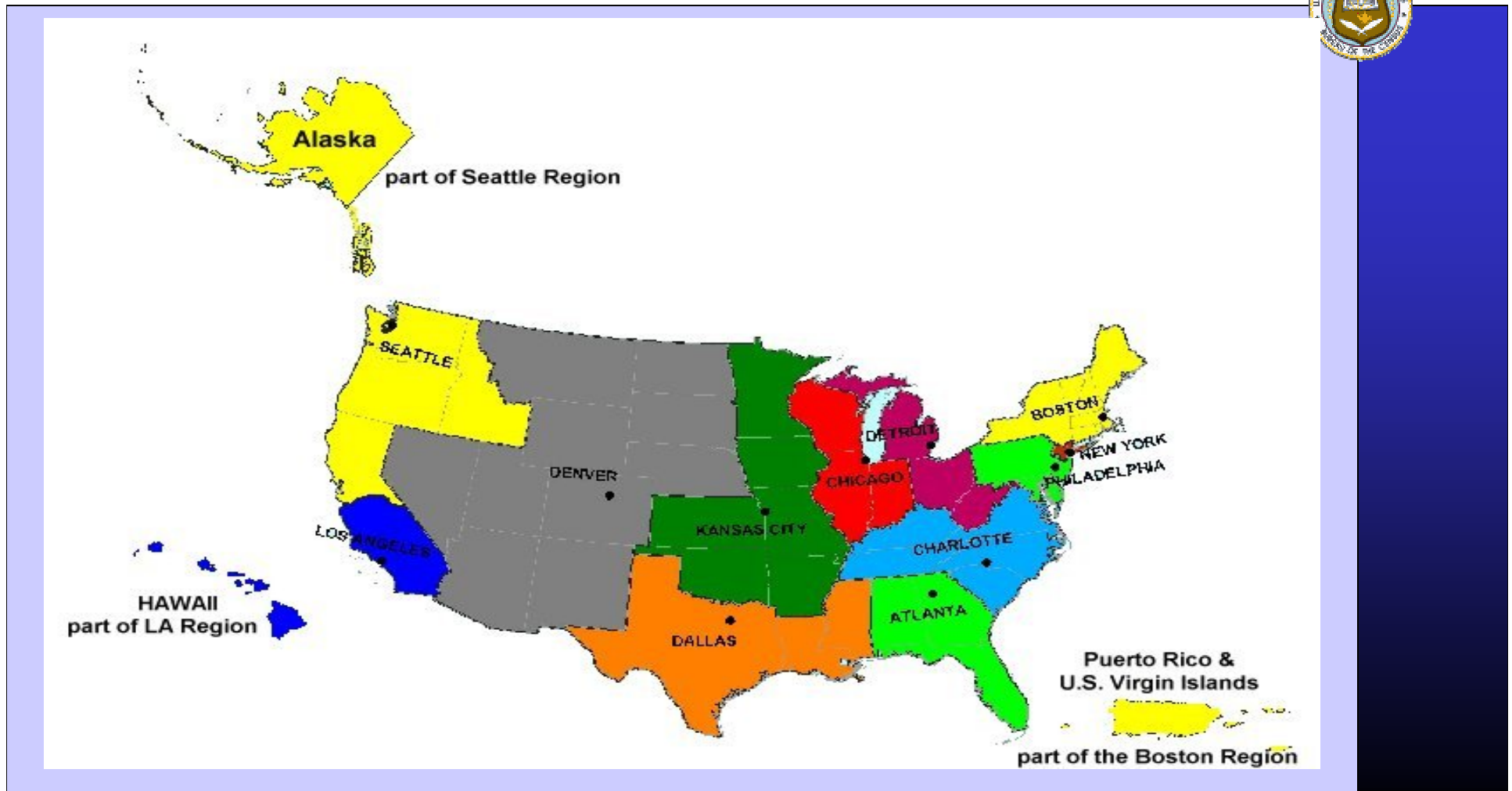
November 4, 2003

CIRGIS Meeting

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U.S. Census Bureau Regional Offices



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How Many People does the LA office employ?



Permanent office located in Van Nuys

Survey - 20 permanent staff

Support - 10 permanent staff

Geography -3 permanent staff

Information Services – 2 permanent staff

What does the Census Bureau do?



Decennial Census every 10 years

Surveys for other Federal Agencies

(CE, CPS, SIPP, AHS)

American Community Survey

(yearly survey of demographic, economic and housing data, replacing the Decennial Census long form)

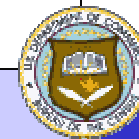
Economic Census in the years ending in 2 and 7

Foreign Trade Statistics

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What does the LA Geography Department do?



- Responsible for the day-to-day contact with tribal, state, and local governments for all geographic programs.
- First-level contact for all questions and issues initiated by geographic program participants
- Responsible for implementation of all geographic programs, such as

↖ Ongoing

- MAFGOR

↖ Pre-census

- LUCA, Statistical Areas, New Construction
- Delineation of census districts, printing of maps

↖ Post Census

- CQR

↖ Next Census (2010)

- MTEP (MAF/TIGER Enhancements Program)

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Why MTEP?

MAF/TIGER Issues



Location information of Mixed/Variable Accuracy



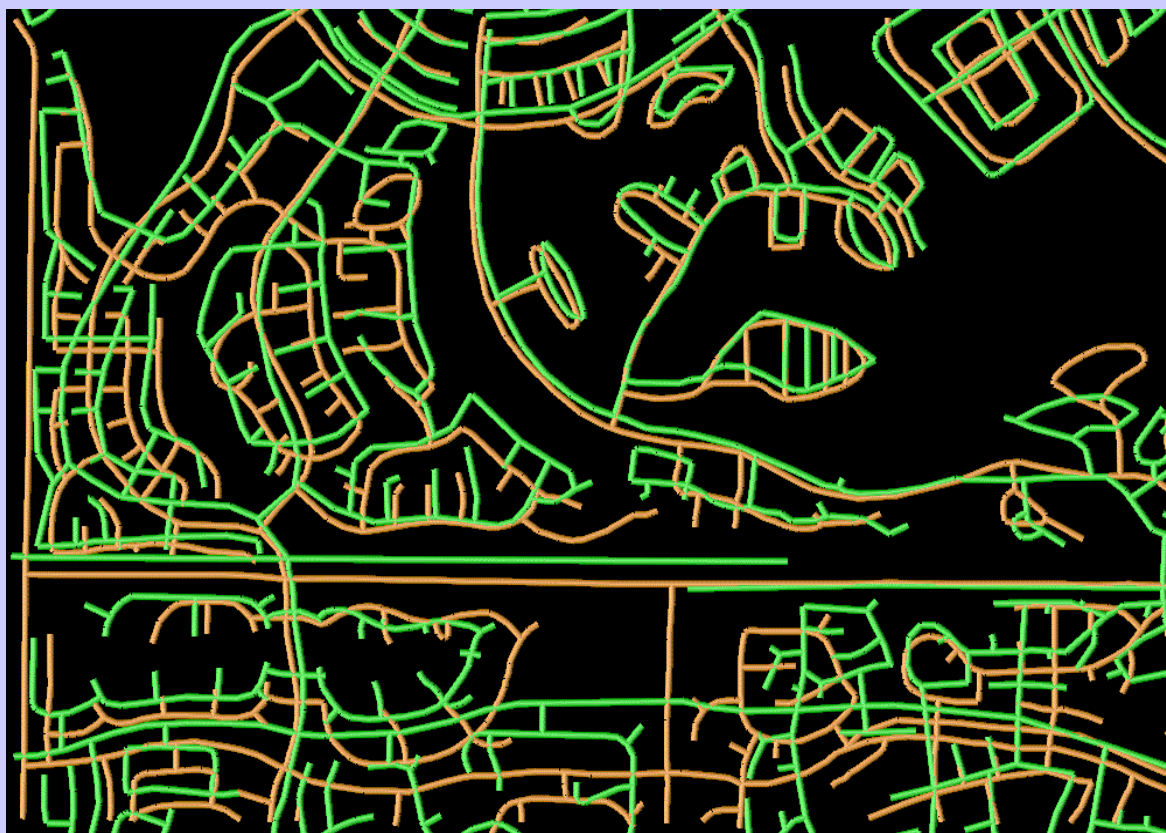
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Why MTEP? MAF/TIGER Issues



Constrains Efforts to Share Digital Data



— TIGER
— Local GIS

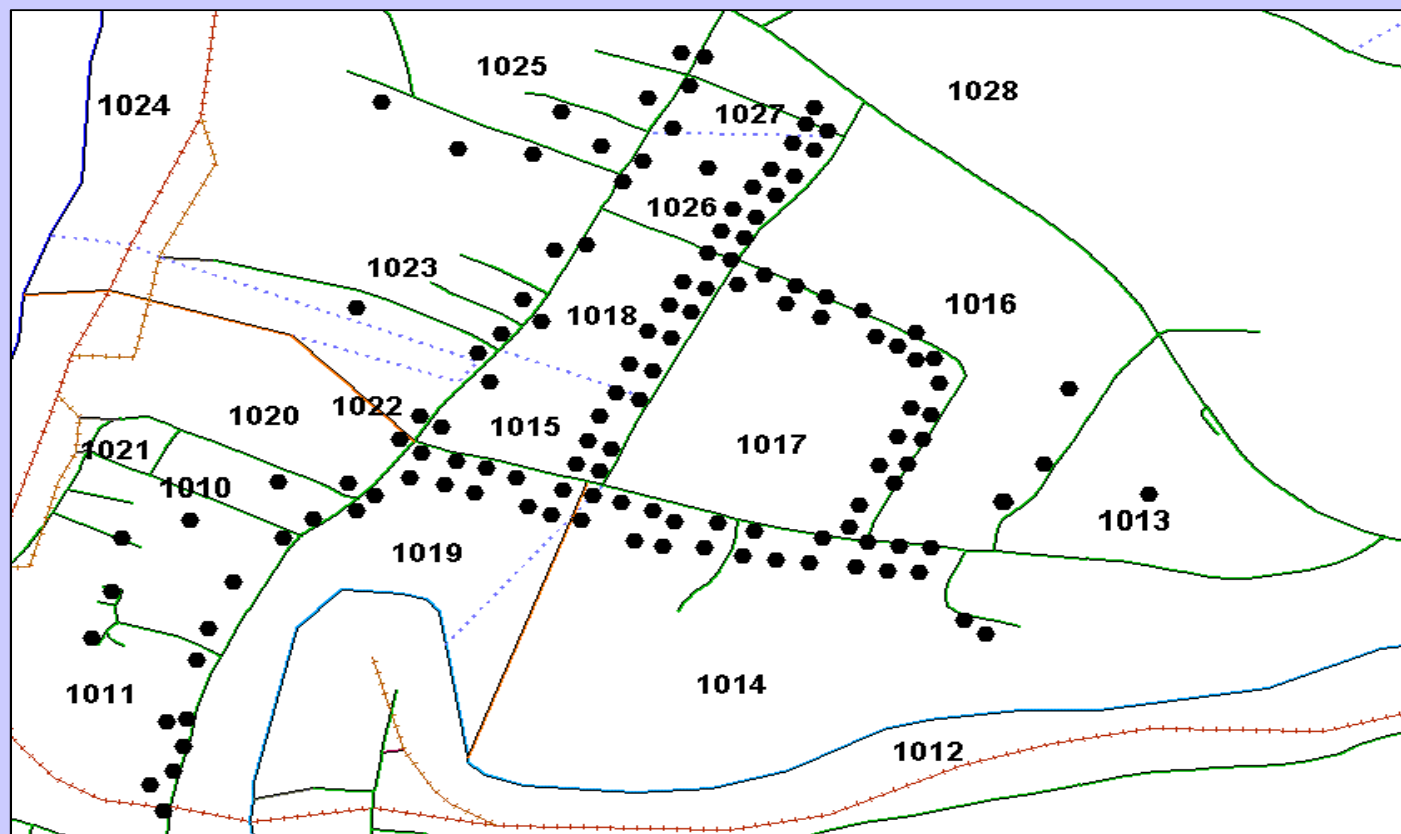
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Why MTEP? MAF/TIGER Issues



Precludes the use of GPS locational Technology



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MAF/TIGER Enhancement Program (MTEP)



PURPOSE:

- Will “modernize and resolve” several aspects and issues of the MAF/TIGER system
- Activities directly support the Administration’s Geospatial One-Stop E-government initiatives in compliance with the requirements of the Government Paper Work Elimination Act, OMB circular A-16, and Executive Order 12906.

The 5 Objectives of MTEP



- 1. MAF/TIGER Accuracy Improvement Project (MTAIP)**
2. Modern MAF/TIGER processing environment
3. *Geographic Partnerships*
4. American Community Survey Coverage Program
5. Periodic evaluation activities

Objective One of the MTEP



MAF/TIGER ACCURACY IMPROVEMENT PROJECT (MTAIP)

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MAF/TIGER Accuracy Improvement Project (MTAIP)



- Correct the locations of streets and other map features (in TIGER);
- Correct the locations of housing units (in the MAF);
- Implement automated change detection methods.

Current Status of the MTAIP



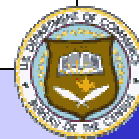
Phase I (Completed December 18, 2002)

- Established the Technical Requirements
- Cost and Schedule Baselines
- Received Authorization to Proceed

Phase II (began January 3, 2003)

- Initial Qualification Testing
- Initial Production – February 2003
- Established the formal Financial Reporting Structure

MTAIP -- How do we Fix TIGER?



Primary Strategy:

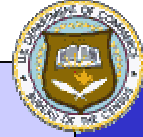
Census Bureau Regional Office Geographers **acquire tribal, state, and local files** to be used as the reference source to correct the street locations, add missing roads, and update the road names.

Secondary Strategy:

Harris Corporation will obtain and use:

- highly accurate private sector GIS files **OR**
- Imagery to build street centerline files **OR**
- Field collects the street centerline information

Desired Digital File Content that Support MTAIP



- Street Centerlines
- Boundaries (counties, places, Federally recognized tribal lands)
- Hydrography
- Rail Features
- Structure Coordinates or Building Footprints (w/ addresses)
- Cadastral or Tax Parcels
- Legal Entity Boundaries
- Census Statistical Entity Boundaries

MTAIP – Evaluation of Source Files



- Source files must meet the Census Bureau's CE 95 **7.6 meter or better spatial accuracy requirement** for street centerline files
- The Census Bureau contracts out the field data collection of **110 GPS coordinate points** for street T-intersections, used to evaluate the **spatial accuracy** of each source file.
- Files that meet the **7.6 meter spatial accuracy requirement** (using circular error 95) are considered for the spatial coordinate enhancement of TIGER.
- **Attributes or other characteristics** of a file may be used if the file does not meet the CE 95 requirement

AND...

MTAIP – Evaluation of Source Files

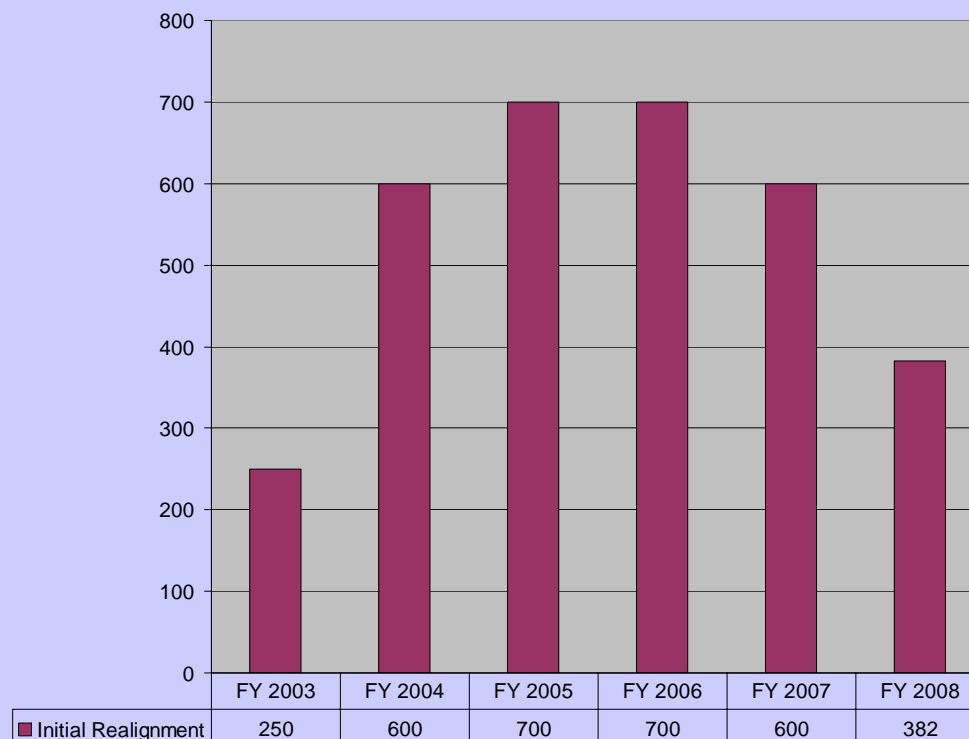


- Addresses and the coordinates for structures, as well as boundaries are evaluated separately.
 - Boundaries for all entities will have to be reviewed relative to the more accurate roads.
 - Each BAS (Boundary and Annexation Survey) cycle will include all entities, regardless of population, in partitions that have completed the MTAIP process since (or during) the previous BAS cycle (year).
 - Census Bureau staff can do some of the boundary adjustments but most will need to be done by Boundary and Annexation Survey (BAS) officials.
- The file must be provided without any royalty or copyright restrictions.

MTAIP...Production Schedule



Projected Annual Production by Fiscal Year (October – September)



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MTAIP Production Process



The major elements of the production process are:

- Source Evaluation, Selection, and Acquisition
- Geospatial Processing
- Address Processing (which is currently on hold)
- Discrepancy Resolution
- Product Delivery and Customer Acceptance, and
- Change Detection and Maintenance.

MTAIP Status for CIRGIS area (can you help?)



Santa Barbara CO.– Requested file

Ventura CO. – Requested File, Census Bureau needs to sign MOU

- 1 city file in house

San Luis Obispo – no County file meeting CE 7.6 accuracy requirement

November 2003- will began calling at the sub county level in the San Luis Obispo area to inventory GIS files.

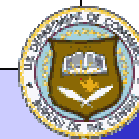
Can you provide any information on GIS in the SLO County area or provide contact information?

Providing Feedback to MTAIP Source Providers



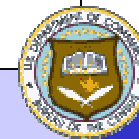
- Confirmation of **documented metadata**
- Written documentation containing the **results of the 110 GPS point evaluation** of the local source file
- Frequency distribution graphs and other **statistics** showing range of coordinate adjustment for nodes
- Written documentation concerning the **suitability of data** within the file, such as boundaries and addresses
- Enhanced **TIGER/Line** file

MTAIP – End Result



- A highly accurate street centerline “digital map” (geographic data base) of the entire United States, Puerto Rico, and the associated Island Areas.
- Correct locations in the MAF/TIGER, and devices equipped with GPS receivers, will provide the tools field staff need to find the correct housing unit/GQ and validate the accuracy of each address.
- Highly accurate MAF/TIGER locations will foster use of GPS locational technology for the American Community Survey and the 2010 Census.

MTAIP – End Result Benefits



- Easier exchange of data and use of census geography in local GIS and The National Map.
- Potential for exchange and update of geographic data via a web application (BAS, STAT AREAS) reduces local government burden to participate (via paper) in Census Programs
- More accurate demographic/spatial data for public use

How can we benefit your organization?



Do you want contact information?

Is there information you plan on collecting
that we can partner on?

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More Information



Census Bureau's Website:
www.census.gov

MTAIP

<http://www.census.gov/geo/mod/partner.html>

TIGER/Line

<http://www.census.gov/geo/www/tiger/index.html>

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Thank You



Questions ???????

Linda Akers

Geographer

818.904.6418

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End



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MAF/TIGER Enhancement Program (MTEP)



- MTEP?
 - Purpose
 - 5 Objectives
- Objective One (MTAIP):
MAF/TIGER Accuracy Improvement Project
- Objective Three:
Geographic Partnerships
- Web Applications Being Tested

Harris and the Implementation of MTAIP



- In 2002, the Census Bureau partnered with the Harris Corporation and signed a contract for the implementation of the MTAIP.
- Harris Corporation Subcontracts Manager:

Mr. Christian Thomas
Harris Corporation
GCSD-IICS
PO BOX 9800
150 South Wickham Road
Melbourne, FL 32902-98000

Cthomas02@harris.com

MTAIP Production Processing Threads



THREAD 1 (Good GIS for all feature classes) <table><tr><th></th><th>ROADS</th><th>BOUND</th><th>HYDRO</th><th>RR/OTHER</th></tr><tr><td>FIELD COLLECT</td><td></td><td></td><td></td><td></td></tr><tr><td>COUNTY GIS</td><td>X</td><td>X</td><td>X</td><td>X</td></tr><tr><td>PARTIAL GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>COMM GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>COMM IM</td><td></td><td></td><td></td><td></td></tr><tr><td>DOQQ</td><td></td><td></td><td></td><td></td></tr><tr><td>NHD FEATURES</td><td></td><td></td><td></td><td></td></tr><tr><td>TIGER</td><td></td><td></td><td></td><td></td></tr></table>		ROADS	BOUND	HYDRO	RR/OTHER	FIELD COLLECT					COUNTY GIS	X	X	X	X	PARTIAL GIS					COMM GIS					COMM IM					DOQQ					NHD FEATURES					TIGER					THREAD 5 (Field collect augmented by other sources) <table><tr><th></th><th>ROADS</th><th>BOUND</th><th>HYDRO</th><th>RR/OTHER</th></tr><tr><td>FIELD COLLECT</td><td>X</td><td></td><td></td><td></td></tr><tr><td>COUNTY GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>PARTIAL GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>COMM GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>COMM IM</td><td></td><td></td><td></td><td></td></tr><tr><td>DOQQ</td><td></td><td></td><td></td><td>X</td></tr><tr><td>NHD FEATURES</td><td></td><td></td><td>X</td><td></td></tr><tr><td>TIGER</td><td></td><td>X</td><td></td><td></td></tr></table>		ROADS	BOUND	HYDRO	RR/OTHER	FIELD COLLECT	X				COUNTY GIS					PARTIAL GIS					COMM GIS					COMM IM					DOQQ				X	NHD FEATURES			X		TIGER		X			THREAD 9 (Partial geospatial GIS plus commercial GIS for surrounding areas) <table><tr><th></th><th>ROADS</th><th>BOUND</th><th>HYDRO</th><th>RR/OTHER</th></tr><tr><td>FIELD COLLECT</td><td></td><td></td><td></td><td></td></tr><tr><td>COUNTY GIS</td><td></td><td></td><td></td><td></td></tr><tr><td>PARTIAL GIS</td><td>X</td><td>X</td><td></td><td></td></tr><tr><td>COMM GIS</td><td>X</td><td></td><td></td><td></td></tr><tr><td>COMM IM</td><td></td><td></td><td></td><td></td></tr><tr><td>DOQQ</td><td></td><td></td><td></td><td>X</td></tr><tr><td>NHD FEATURES</td><td></td><td></td><td>X</td><td></td></tr><tr><td>TIGER</td><td></td><td>X</td><td></td><td></td></tr></table>		ROADS	BOUND	HYDRO	RR/OTHER	FIELD COLLECT					COUNTY GIS					PARTIAL GIS	X	X			COMM GIS	X				COMM IM					DOQQ				X	NHD FEATURES			X		TIGER		X			THREAD 13 (Low spatial accuracy GIS/ good attribution augmented by good accuracy imagery) <table><tr><th></th><th>ROADS</th><th>BOUND</th><th>HYDRO</th><th>RR/OTHER</th></tr><tr><td>FIELD COLLECT</td><td>X</td><td></td><td></td><td></td></tr><tr><td>COUNTY GIS</td><td>X</td><td>X</td><td></td><td></td></tr><tr><td>PARTIAL GIS</td><td>X</td><td></td><td></td><td></td></tr><tr><td>COMM GIS</td><td>X</td><td></td><td></td><td></td></tr><tr><td>COMM IM</td><td>X</td><td></td><td></td><td></td></tr><tr><td>DOQQ</td><td></td><td></td><td></td><td>X</td></tr><tr><td>NHD FEATURES</td><td></td><td></td><td>X</td><td></td></tr><tr><td>TIGER</td><td></td><td>X</td><td></td><td></td></tr></table>		ROADS	BOUND	HYDRO	RR/OTHER	FIELD COLLECT	X				COUNTY GIS	X	X			PARTIAL GIS	X				COMM GIS	X				COMM IM	X				DOQQ				X	NHD FEATURES			X		TIGER		X		
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Notes:

In all cases, DOQQs will be used as reference when available

In all cases, NHD will be used for reach codes. The NHD entries above pertain to use of NHD for feature alignment

In some cases, we may opt to simply rubber sheet TIGER data for RR/Other

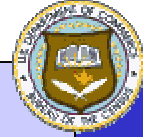
Note that TIGER appears as a source type. Actually it cannot be the reference for fixing itself. But in some cases for Boundaries, it may be the best data

Note that source decisions on commercial imagery versus DOQQ for reference for alignment may lead to different costs, both the processing thread for the imagery is the same.

Contingency threads will be created to handle special cases such as the portions of Alaska for which there is no NHD or for addressing harvesting scenarios if they become part to the program.

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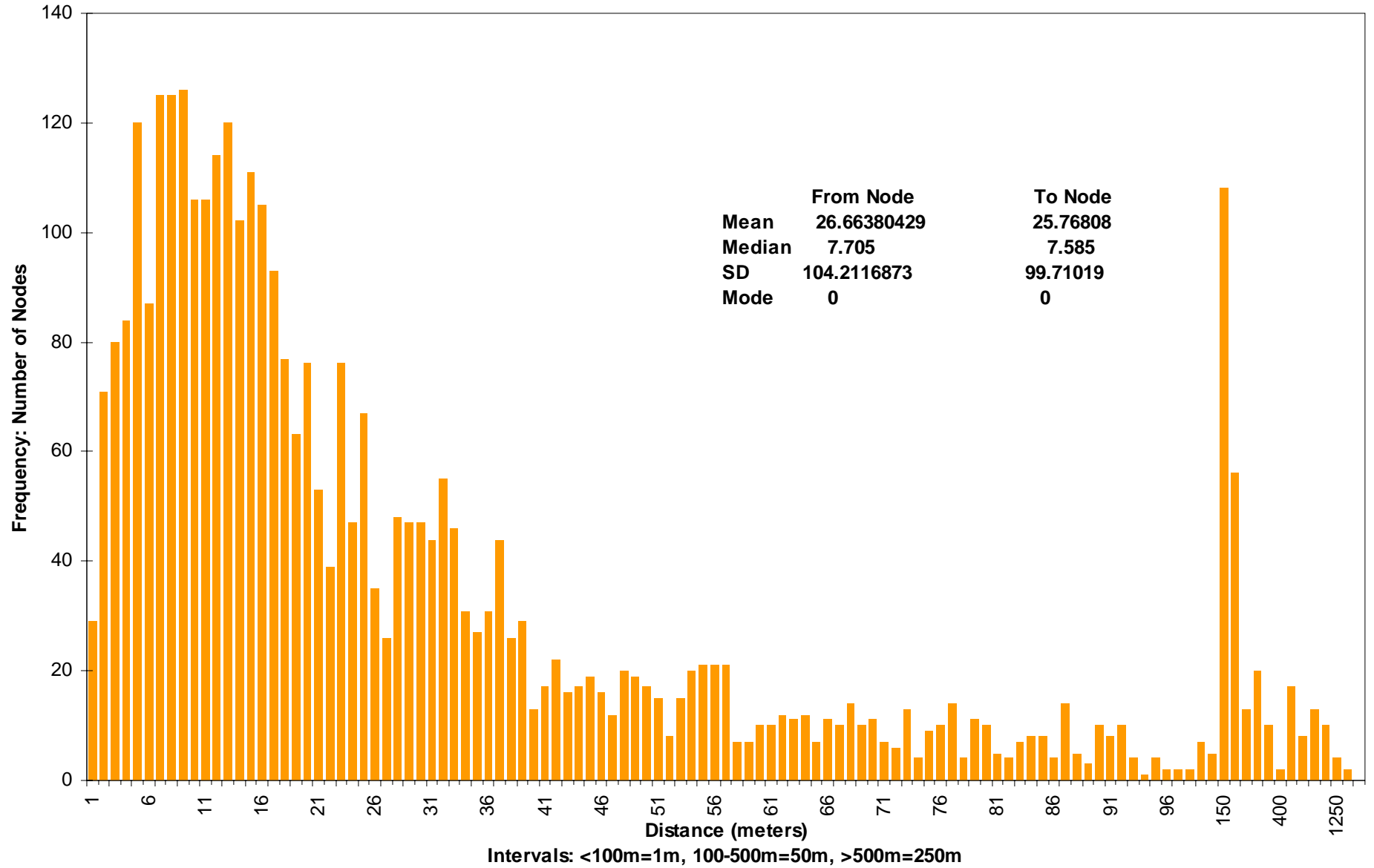
MTAIP Production Schedule



Projected Annual Production by Fiscal Year (October – September)

- FY03 – Approx. 74 Counties
 - FY04 – Approx. 600 Counties
 - FY05 – Approx. 700 Counties
 - FY06 – Approx. 700 Counties
 - FY07 – Approx. 600 Counties
 - FY08 – Approx. 250 Counties
-
- FY03 – An additional 176 Counties completed through other contracts

Distance Data for TIGER Adjustment: c46075, Jones SD
(Total number of nodes = 5916. Nodes with 0m shift = 2273)



Objective Three of the MTEP

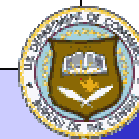


Geographic Partnerships

U S C E N S U S B U R E A U

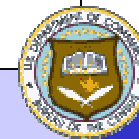
Helping You Make Informed Decisions

Why Geographic Partnerships?



- Census Address List Improvement Act of 1994 (Public Law 103-420)
- Experience in the 2000 Decennial Census
- Duplication of Effort
- Lack of Funds / Coordination of Funds and resources

Why Geographic Partnerships?



- Expand and encourage geographic partnerships with all sectors of government, the organizations that serve them, and the private sector
- To accomplish this objective the Census Bureau has:
 - **Developed and deployed new strategies to:**
 - ➔ Communicate more effectively with these groups
 - ➔ Increase participation in geographic programs
 - ➔ Effectively integrate the address list review program, street centerline update program, and boundary reporting programs that now exist as separate programs.
 - **Establish new partnerships** that can be used to improve the accuracy, currency and coverage of the MAF/TIGER databases.

Coordinating the Geographic Partnerships Program



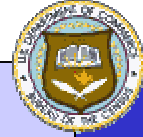
- National Geographic Partnerships Team
- Tribal/State Geographic Partnerships Branch
- Local Geographic Partnerships Branch
- The Census Bureau's Field Regional Offices

National Geographic Partnerships Team



- Develops geographic standards and represents the Census Bureau on various national and international geographic standards bodies.
 - Federal Geographic Data Committee (FGDC)
 - Geospatial One-Stop E-government Committee
 - Technical Committee 211 of the International Standards Organization
 - Chairs the FGDC Subcommittee on Cultural and Demographic Data
- Manages relationships with federal agencies and national-level organizations (excluding the U.S. Postal Service).

Tribal/State Geographic Partnerships Branch

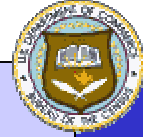


- Coordinates all tribal and state geographic partnership programs
- Coordinates these partnership programs with the organizations that represents them, such as
 - Urban and Regional Information Systems Association (URISA)
 - National Congress of American Indians
 - State Data Centers Program
 - Census Bureau's Advisory Committee
 - National States Geographic Information Council
- Acts as liaison with commercial data content providers.
- Develops new partnerships and methods to work with tribal and state governments and organizations that have digital address and geographic files

U S C E N S U S B U R E A U

Helping You Make Informed Decisions

Local Geographic Partnerships Branch



- Coordinates all regional, county, and local geographic partnership programs
- Coordinates these partnership programs with various organizations representing local governments, such as
 - National Association of Towns and Townships
 - National Association of Counties
 - National Emergency Numbers Association
- Responsible for the design, coordination, and execution of all geographic programs, such as
 - Acquisition of digital files
 - Local Update of Census Addresses Program (LUCA)
 - Statistical Areas
 - Boundary and Annexation Survey (BAS)

U S C E N S U S B U R E A U

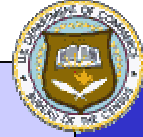
Helping You Make Informed Decisions

Field Regional Offices



- Responsible for the day-to-day contact with tribal, state, and local governments for all geographic programs.
- First-level contact for all questions and issues initiated by geographic program participants
- Responsible for implementation of all geographic programs, such as
 - Inventory of available resources (TED)
 - Resource sharing recommendations
 - Acquisition of digital files for MTAIP
 - Local Update of Census Addresses Program (LUCA)
 - Count Question Resolution Program

MTAIP and Geographic Partnerships



How can YOU participate?

- Provide the Census Bureau (via the Regional Geographers) with GIS files that meet our accuracy requirements and have good written descriptions of the contents (metadata)
- Continue to participate in the Boundary and Annexation Survey so we can represent the boundary information accurately
- Keep the Regional Geographers informed / involved in data development activities

MTAIP and Geographic Partnerships



What is the return to our partners?

- Improved address and map accuracy!
- More effective geographic partnerships
- A source for The National Map, Geospatial One-Stop, and the National Spatial Data Infrastructure
- A major contribution to a more effective / lower cost 2010 Census, ACS, and other household survey operations.

MTAIP and Geographic Partnerships



What is the return to our partners?

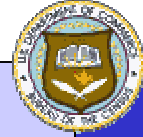
(continued...)

- BAS via a web application (CIPI – 2)
- Easier exchange of geographic data and use of census geography in local GIS
- “Enhanced” TIGER/Line (before general distribution)
- Potential for exchange and update of geographic data via web applications (exchange and maintenance of GIS files is a new and growing field)

U S C E N S U S B U R E A U

Helping You Make Informed Decisions

Web Applications Being Tested: Geo-spatial One Stop Initiative and the Census Bureau



- **Open Geographic Information System Consortium, Inc (OGC)**
- **Seamless Interoperability utilizing the Internet**
- **Census Test Pilots – Prototypes**
 - Web BAS
 - Web TIGER/GML

Web Applications Being Tested:



Web BAS

WebBAS Demonstration Application

Session Help

Question

Have there been any legal boundary changes to this municipality during the survey period shown, or is the boundary shown for this municipality incorrect?

Yes No

☒ Additions

☒ Deletions

☒ Jurisdiction

☒ Place

☒ County

☒ CountySubdivision

☒ Road

☒ CongressionalDistri...

☒ River

☒ Railroad

☒ NonvisibleBoundary

Current Question: Municipality Boundary Change

A map showing a municipality boundary in yellow. The boundary is outlined in blue. A red line, likely a road or river, crosses the boundary. The map is displayed within a window titled "WebBAS Demonstration Application". To the left of the map is a list of features with checkboxes and symbols. To the right of the map is a vertical toolbar with various icons for map navigation and editing.

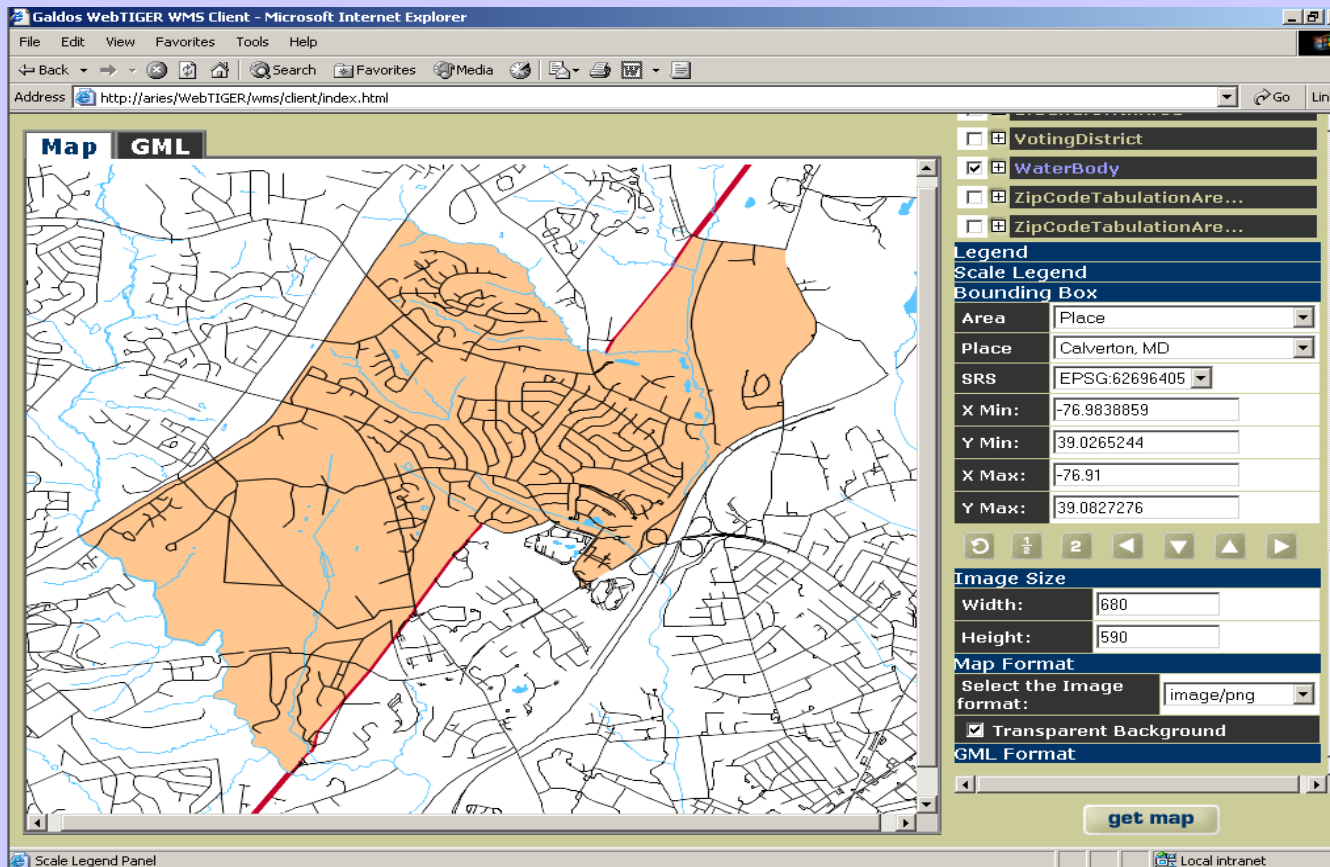
USCENSUSBUREAU

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Web Applications Being Tested:



Web TIGER Map



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